

**Remarks**

The Office Action mailed July 3, 2006 has been received and reviewed. Claims 18 and 43 having been amended, and claims 76-78 having been added or canceled, the pending claims are claims 1-78, with claims 57-75 having been withdrawn from consideration by the Examiner. Applicants thank the Examiner for reconsidering the Restriction Requirement mailed January 3, 2006, and rejoining non-elected Group II (claims 12-56) with elected Group I (claims 1-11).

Claims 76-78 have been added to further claim Applicants' invention. Support for the new claims may be found in the claims as filed as well as in the specification, for example at page 6, lines 23-24, and page 9, lines 20-21.

Claim 18 has been amended, as suggested by the Examiner, to delete the term "the alkene." Claim 43 has been amended merely to correct an obvious typographical error.

No new matter has been added as a result of the foregoing amendments.

Reconsideration and withdrawal of the rejections, in view of the above amendments and the following comments, are respectfully requested.

**Telephone Interview**

Applicants thank the Examiner for the courtesy extended during a telephone interview which took place on 10 October 2006 between the Examiner and Applicants' Representatives Loren D. Albin and Kathleen L. Franklin. The teachings of the cited art as applied to Applicants' pending claims were discussed.

**The 35 U.S.C. §112, Second Paragraph, Rejection**

The Examiner rejected claim 18 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 18 has been amended herein to delete the term "the alkene." In view of the amendment made herein to claim 18, Applicants respectfully submit that the rejection of claim 18 under 35 U.S. C. §112, second paragraph, has been rendered moot.

Reconsideration and withdrawal of the above rejection are respectfully requested.

**The 35 U.S.C. §102 Rejection**

The Examiner rejected claims 1-5, 7, 8, 10, 12-17, 22-25, 29, 33, 36-40, 43-46, 50 and 54 under 35 U.S.C. §102(b) as being anticipated by Yokoyama et al. (U.S. Patent No. 5,905,180). Applicants respectfully traverse this rejection.

For a claim to be anticipated under 35 U.S.C. § 102(b), each and every element of the claim must be found in a single prior art reference (M.P.E.P. §2131). Applicants respectfully assert that Yokoyama et al. fail to teach each and every element of the rejected claims.

Each of independent claims 1, 12, and 36 recite “forming a film of the fuel source” on the wall of the reactor. This feature, as admitted by the Examiner, is not explicitly disclosed in Yokoyama et al. Applicants assert, contrary to the Examiner’s position, that this feature is also not *inherently* disclosed in Yokoyama et al.

“The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic” M.P.E.P. §2112(IV), Rev. 5, August 2006. “The mere fact that a certain result or characteristic *may* result from a given set of circumstances is not sufficient to establish inherency” *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *citing*, *In re Oelrich*, 66 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). “Inherency [, however,] may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’ ” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999), *citing*, *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991); M.P.E.P. §2112(IV), Rev. 5, August 2006. Furthermore, “[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)(emphasis in original); M.P.E.P. §2112(IV), Rev. 5, August

2006. Applicants asserts that the Examiner has failed to establish that Yokoyama et al. *necessarily* teach that a film of the fuel source is formed on the wall of the reactor; thus, cannot rely on the theory of inherency to support the present rejection.

The Examiner contends that by preheating and vaporizing the feed, "a thin film would inherently form on the reactor wall" (page 3, last line of the Office Action mailed July 3, 2006). The Examiner has not, however, provided any evidence that, or any reasoning as to why, such a film is a *necessary* characteristic of vaporized reactant in a reactor according to the disclosure of Yokoyama et al. In fact, Applicants submit that whether or not a thin film forms on the reactor wall can depend on a variety of factors, such as the nature of the fuel source (e.g., a liquid fuel source or a gaseous fuel source).

For example, Yokoyama et al. teach "[a] process for the production of a mono-olefin from a *gaseous paraffinic hydrocarbon* having at least two carbon atoms or mixtures thereof" (Yokoyama et al., abstract; emphasis added). Yokoyama et al. further recite that:

[t]he paraffins which are suitable for the present process are generally those that can be vaporized at temperatures in the range of 25 to 400°C at pressures of 0.1 to 5 atm. These are generally C<sub>2</sub> to C<sub>20</sub> carbon atom alkanes either alone or in mixtures, preferably having two to eight carbon atoms. Suitable alkanes include ethane, propane, n-butane isobutane, n-pentane, isoamylanes, n-hexane, isohexanes, n-heptane, isoheptane, octane and isoctanes. Since a preferred embodiment includes a preheating of the feed to the reaction zone, *the necessity to heat an alkane feed above ambient temperature to obtain a vaporous feed* is not a negative consideration. (Yokoyama et al., column 4, lines 35-46; emphasis added).

Thus, although the paraffins disclosed by Yokoyama et al. clearly include compounds that are gases and liquids under ambient conditions, Yokoyama et al. clearly recite preheating the feed, if required, to provide a gaseous or vaporous feed. Further, the Examiner has provided no evidence

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that such a gaseous or vaporous feed provided to a reactor according to the teachings of Yokoyama et al. would *necessarily* form a film on the reactor wall.

For at least this reason, Applicants respectfully submit that the formation of a thin film on the reactor wall does not necessarily follow from the teachings of Yokoyama et al.

For at least the above reasons, Applicants respectfully submit that Yokoyama et al. fail to anticipate independent claims 1, 12, and 36, as well as claims 2-5, 7, 8, 10, 13-17, 22-25, 29, 33, 37-40, 43-46, 50 and 54 dependent thereto. Reconsideration and withdrawal of the above rejection are respectfully requested.

### **The 35 U.S.C. §103 Rejection**

The Examiner rejected claims 6, 9, 11, 18-21, 26-28, 30-32, 34, 35, 41, 42, 47-49, 51-53, 55, and 56 under 35 U.S.C. §103(a) as being unpatentable over Yokoyama et al. in view of WO 00/14180. Applicants respectfully traverse this rejection.

In order to establish a *prima facie* case of obviousness, the Examiner must establish that there is a motivation to combine the documents (or modify the teachings of a document) to achieve the claimed invention, with a reasonable expectation of success. Further, the references must teach or suggest every element of the claimed invention. For at least the reasons set forth below, it is respectfully submitted that the Examiner has failed to make the requisite showing of a *prima facie* case of obviousness.

In view of the comments stated above, Applicants continue to assert that independent claims 1, 12, and 36 are neither taught nor suggested by Yokoyama et al. Further, as international publication WO 00/14180 also fails to teach or suggest forming a film of a fuel source on a wall of a reactor, it does not remedy the deficiencies of Yokoyama et al. Thus, for at least the reason that Yokoyama et al. in view of WO 00/14180 fail to teach every element of the invention as recited in the rejected claims, Applicants submit that claims 6, 9, and 11, dependent upon claim 1; claims 18-21, 26-28, 30-32, 34, 35, dependent upon claim 12; and claims 41, 42,

47-49, 51-53, 55, and 56 dependent upon claim 36 are not obvious over Yokoyama et al. in view of WO 00/14180.

Reconsideration and withdrawal of the foregoing rejection are respectfully requested.

**New Claims 76-78**

New claims 76-78, which further claim Applicants' invention as disclosed in the specification, are novel and nonobvious over Yokoyama et al. for at least the reason that, as discussed above, Yokoyama et al. fail to teach or suggest a process that includes delivering a liquid fuel source to a reactor, as recited in claims 76-78.

Applicants respectfully submit that new claims 76-78 are patentable and request their entry, consideration, and allowance.

**Summary**

It is respectfully submitted that the pending claims are in condition for allowance and notification to that effect is respectfully requested.

**Amendment and Response**

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The Examiner is invited to contact Applicants' Representatives at the telephone number listed below if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted

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30 October 2006

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LDA/KLF/sjt

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**CERTIFICATE UNDER 37 CFR §1.10:**

"Express Mail" mailing label number: EV 073686735 US

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The undersigned hereby certifies that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and is addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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